JAPANESE [JP,2004-275106,A]

CLAIMS DETAILED DESCRIPTION TECHNICAL FIELD PRIOR ART EFFECT OF THE INVENTION TECHNICAL PROBLEM MEANS DESCRIPTION OF DRAWINGS DRAWINGS

[Translation done.]

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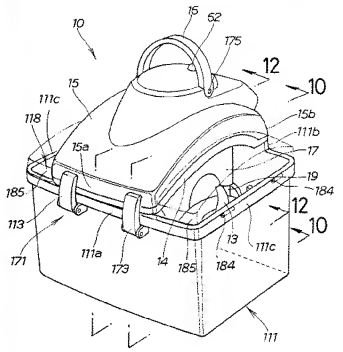
DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention]
This invention relates to the electric work machine which drives an operation part with an electric motor.
[0002]
[Description of the Prior Art]
A fender is provided in the right-and-left side of the body, and the walk type tilling machine provided with the tilling rotor under the fender on either side is known (for example, refer to patent documents 1.).
[0003]
[Patent documents 1]
JP,58-124378,U (the two - 3rd page, Drawing 2)
[0004]
The above patent documents 1 are explained in detail, after referring to the following figure.
Drawing 19 is a front view showing the conventional walk

Drawing selection Representative draw



[Translation done.]

type tilling machine. Numerals were reshaken.
The walk type tilling machine 200 forms the fender 202,202 (a fictitious outline shows) of a couple from the left right-hand side of the body 201, and is provided with the tilling rotor 204 under the fender 202,203 of a couple.
[0005]
According to the walk type tilling machine 200, the tilling rotor 204 can be covered from the left right-hand side by the fender 202,202 of a couple by folding up the fender 202,202 of a couple caudad like an arrow.
There is no fear of a worker's clothing touching and becoming dirty on the tilling rotor 204 by this, for conveyance or storage, when loading the walk type tilling machine 200 into the loading platform of a track, or when storing to storage space.
[0006]
[Problem(s) to be Solved by the Invention]
By the way, if dirt, such as the ground, is kept adhered on the tilling rotor 204 after carrying out tilling of the soil with the tilling rotor 204, rust will occur on the tilling rotor 204. In order not to make the tilling rotor 204 generate rust, it is necessary to use the tilling rotor 204 for a brush etc. and to remove dirt from the tilling rotor 204 manually after the completion of work.
However, the tilling rotor 204 is the tilling nail 205... There are comparatively many numbers, and they need to wash this 205...1 tilling nail at a time manually, and washing of the tilling rotor 204 takes time and effort.
[0007]
Then, the purpose of this invention can prevent a worker's clothing from touching and becoming dirty on a tilling rotor in the time of conveyance, and the case of storage, and there is in providing the electric control machine which can wash a tilling rotor easily without applying time and effort.
[0008]
[Means for Solving the Problem]
To achieve the above objects, claim 1 forms an electric motor in a body, and a tilling axis connected with an electric motor under this body is established, While being an electric control machine which carries out tilling of the soil by a tilling nail by forming a tilling nail in this tilling axis, and rotating a tilling axis with said electric motor and storing said tilling axis and said tilling nail, Where a tilling axis and a tilling nail are stored in storage and a washing box constituted so that an opening might be covered on said body, and this storage and washing box, It is characterized by locking means which stops a body to storage and a

washing box, control section which maintains said electric motor at a controllable state in the state where storage and a washing box were made to stop a body by this locking means, and a thing, ** and others.

[0009]

A tilling axis and a tilling nail were stored to storage and a washing box, and an opening of storage and a washing box was covered on a body, and it constituted so that a body might be stopped to storage and a washing box by a locking means. Therefore, it becomes possible to carry an electric control machine and to keep a tilling axis and a tilling nail in the state where it stored to storage and a washing box. Thereby, when carrying and keeping an electric control machine, it can store to a loading platform and storage space of a track, without making a tilling axis and a tilling nail touch a worker's clothing.

[0010]

It constituted from a state where storage and a washing box were made to stop a body by a locking means so that an electric motor might be kept controllable. Therefore, after supplying wash water in storage and a washing box, a tilling axis and a tilling nail are washed in storage and a washing box by making an electric motor drive and rotating a tilling nail.

[0011]

Claim 2 forms an electric motor in a body, and a tilling axis connected with an electric motor under this body is established, While being an electric control machine which carries out tilling of the soil by a tilling nail by forming a tilling nail in this tilling axis, and rotating a tilling axis with said electric motor and storing said tilling axis and said tilling nail, Where a tilling axis and a tilling nail are stored in storage and a washing box constituted so that an opening might be covered on said body, and this storage and washing box, A detection means to which a body side edge child who provided in said body is made to connect a stop side edge child who provided in said locking means when storage and a washing box are made to stop a body by locking means which stops a body to storage and a washing box, and this locking means, When connecting a stop side edge child of this detection means to a body side edge child, it is characterized by control section which maintains said electric motor at a controllable state, and a thing, ** and others.

[0012]

According to claim 2, like claim 1, a tilling axis and a tilling nail were stored to storage and a washing box, and an

opening of storage and a washing box was covered on a body, and it constituted so that a body might be stopped to storage and a washing box by a locking means.
Thus, when carrying an electric control machine and keeping a tilling axis and a tilling nail by storing to storage and a washing box, it becomes possible to store to a loading platform and storage space of a track so that a worker's clothing can be touched at neither a tilling axis nor a tilling nail.
[0013]
In addition, when according to claim 2 making storage and a washing box stop a body by a locking means and connecting a stop side edge child of a detection means to a body side edge child, it constituted from detecting connection of both terminals by a control section so that an electric motor might be maintained at a controllable state.
Therefore, only when storage and a washing box are made to stop a body by a locking means, an electric motor can be made to be able to control certainly and a tilling axis and a tilling nail can be washed in storage and a washing box.
[0014]
[Embodiment of the Invention]
An embodiment of the invention is described below based on an accompanying drawing. in addition -- "-- front" -- "-- back", the "left", and the "right" -- "-- upper" -- "-- lower" follows in the direction seen from the worker of the electric control machine. A drawing shall be seen to direction of numerals.
[0015]
Drawing 1 is a perspective view showing the electric control machine concerning this invention.
Two or more tilling nails 13 as an operation part which the electric control machine 10 is transmitting the power of the electric motor 11 as a driving source to the tilling axis 12, and was attached to this tilling axis 12 ... (... shows plurality.) below the same. The tilling nail 13 ... while making tilling work do -- the tilling nail 13 -- making it make it run in ... further -- with a wrap a top by the fender 14. It is the self-propelled walking type electric work machine which put the upper cover 15 on the fender 14, and a front TAIN type control machine (tilling machine) is called.
The tilling axis 12 is the axis of rotation horizontally prolonged to the body width direction. The fender 14 is mainly covering aiming at earth-and-sand preventing scattering.
[0016]

Drawing 2 is a side view showing the electric control machine concerning this invention.
The electric control machine 10. [which can hold and carry single hand the career handle 16 provided in the upper bed part of the upper cover 15] It is a very small control machine and has the operation handle 18 prolonged from the body 17 to from the rear of the body 17 to the method [Specifically] of Gokami to back, and the resistant bar 19 prolonged from the back lower part of the body 17 to a lower part.
[0017]
The operation handle 18 equips the handle stem 122 with the handle 124, enabling a free slide. By making the handle 124 slide to a sliding direction along with the handle stem 122, the height of the grip members 70 and 80 on either side can be set up according to a worker's height or liking. Controlling the operation handle 18, he can take after the electric control machine 10 it runs, and the worker can work with a walk.
About the operation handle 18, it explains in full detail by drawing 6 - drawing 15.
[0018]
inserting the resistant bar 19 into the ground -- the tilling nail 13 -- while setting up the tillage depth by ... the tilling nail 13 -- it is a stick which adds the resistance force to the traction which is ...
[0019]
the electric control machine 10 -- the lower half part of the body 17, and the tilling nail 13 -- in order to wash ... etc., storage and the washing box 111 (a fictitious outline shows) are prepared.
using this storage and washing box 111 -- the lower half part of the body 17, and the tilling nail 13 -- the time of washing ... etc. -- the lower half part of the body 17, and the tilling nail 13 -- putting ... into storage and the washing box 111 (a fictitious outline shows) -- the tilling axis 12 (refer to drawing 1) and the tilling nail 13 ... is washed.
In this case, the fender 14 will be put and set to the storage and the washing box 111 which opened the top wide. That is, the fender 14 plays the role of a wrap lid for the opening of storage and the washing box 111.
Storage and the washing box 111 are mentioned later.
[0020]
Drawing 3 is a top view showing the electric control machine concerning this invention.
The electric control machine 10 equips the Gokami part of the upper cover 15 with the control box 20.

The control box 20 is provided with the indicator 21 of body width center CL, the left-hand side washing switch 22, and the right-hand side charging socket 23.
The handle 124 of the operation handle 18 has the handle part 151,152 of the right and left prolonged behind the body 17 (refer to drawing 1), and attaches the left grip member 70 and the right grip member 80 to the right and left ends of them 151,152.
[0021]
Drawing 4 (a) is a sectional view showing the electric control machine concerning this invention, and drawing 4 (b) is a 4b-4b line sectional view of (a).
passing the driving mechanism 40 and the tilling axis 12 to the lower part of the body 17, as shown in (a) -- two or more tilling nails 13 -- attaching ... and passing the driving mechanism 40 and the tilling axis 12 for the power of the electric motor 11 -- the tilling nail 13 -- it transmits to ...
[0022]
The motor shaft 11a of the electric motor 11 was extended below, and, specifically, the driving mechanism 40 has been arranged just under this motor shaft 11a.
The driving mechanism 40 is a mechanism connected with the motor shaft 11a via the coupling 41, and consists of the motor shaft 11a, the almost vertical transmission shaft 42 arranged on the same axle, and the worm-gearing mechanism 43 in which power is transmitted to the level tilling axis 12 from the lower part of the transmission shaft 42.
Warm one 44 which formed the worm-gearing mechanism 43 in the transmission shaft 42, the worm gear 45 which carried out spline combining to the tilling axis 12, and **, ** and others
[0023]
Thus, attach the worm gear 45 to the tilling axis 12, and it engages warm one 44 to the worm gear 45, The transmission shaft 42 can be extended upwards from this end warm [44], this transmission shaft 42 can be connected with the electric motor 11 via the coupling 41, and package storage of the worm-gearing mechanism 43 and the transmission shaft 42 can be carried out at the body 17 as a transmission case. 46 -- a lid and 47 ... is a bearing.
[0024]
The center Cm Cm of the electric motor 11, i.e., the center of the motor shaft 11a, is in the position which separated only the distance Di from main Cs of the tilling axis 12 back.
This distance Di is decided by the size of warm one 44 and

the worm gear 45. The worm-gearing mechanism 43 may be changed into other gear mechanisms, for example, a "bevel gear mechanism", and "screw gear mechanisms." The center Cm of the motor shaft 11a is made to agree in main Cs of the tilling axis 12 by changing into a bevel gear mechanism.
[0025]
By the way, the body 17 forms in one the tubed resistant bar supporter 57 prolonged to a lower part from the tubed handle support part 51 and the Gokami part which are prolonged from the Gokami part to the method of Gokami. The handle stem 122 of the operation handle 18 is attached to the body 17 by inserting the base end 122a of the handle stem 122 of the operation handle 18 in the support pipe 126 of the handle support part 51, and locking with the locking lever 141 of the handle-stem means for locking 135.
[0026]
The handle support part 51 equips an inside with the body side edge children (fixed electrode) 53 and 54 of a couple at one.
As shown in (b), the inside of the support pipe 126 of the handle support part 51 is specifically equipped with the body side edge children 53 and 54 of a couple, and the terminals 66a and 66a connected to the wire harness 65a and 65a at these body side edge children 53 and 54 are connected.
The wire harness 65a and 65a is connected to the control section 102 (refer to drawing 5) in the control box 2.
This connects the body side edge children 53 and 54 to the control section 102.
[0027]
The operation handle 18 equips the base end 122a peripheral face of the handle stem 122 with the handle side edge child (movable electrode) 55.
The combination structure of the body side edge children 53 and 54 of a couple and the handle side edge child 55 accomplishes the handle wearing switch 56. Between the body side edge children 53 and 54 of a couple is electrically connected by the handle side edge child 55 by inserting the base end 122a of the handle stem 122 which constitutes the operation handle 18 from the upper part in the support pipe 126 of the handle support part 51.
On the other hand, the body side edge children 53 and 54 of a couple are electrically made un-connecting by extracting the base end 122a of the handle stem 122 up from the inside of the support pipe 126 of the handle support part 51.
[0028]
The resistant bar 19 is inserted in the resistant bar supporter

57 from the lower part, and it attaches to it by the pin 58.
[0029]
forming the rotation sensor (speed detector) 61 which detects the revolving speed (namely, actual speed) of the electric motor 11 in the upper bed of the electric motor 11 -- between the fender 14 and the upper covers 15 -- the battery 31 ... is arranged and the receiver 62 is attached to the Gokami part of the upper cover 15.
[0030]
Drawing 5 is an electric diagram showing the electric control machine concerning this invention. The electric diagram about the control box 20, the left grip member 70, and the right grip member 80 is shown.
The left grip member 70 is provided with the working starting switch 74, the main switch 75, the encoder 76, and the transmitter 77.
The right grip member 80 is provided with the work preparation switch 86, the low-speed switch 91, the medium-speed switch 92, the high speed switch 93, the encoder 94, and the transmitter 95.
[0031]
The control box 20 is provided with the decoder (signal decipherment circuit) 101 which decodes the radio signal received with the receiver 62, the control section 102, and the motor drive circuit 103.
[0032]
This codes each switch signal of the grip members 70 and 80 on either side, i.e., a manipulate signal, with the encoders 76 and 94, The encoded signal is sent as a radio signal with the transmitters 77 and 95, the receiver 62 receives the radio signal, the received encoded signal is decoded by the decoder 101, and the decipherment signal is emitted to the control section 102.
[0033]
A "radio signal" is a signal which can be transmitted to the receiver 62 from the transmitters 77 and 95 on radio here, for example, there is a signal by electromagnetic waves, such as infrared rays and an electric wave.
What is necessary is to use the transmitters 77 and 95 as a light emitting device, and just to let the receiver 62 be a photo detector, when infrared rays are adopted as a radio signal.
[0034]
Furthermore, the control box 20 is provided with the indicator 21, the washing switch 22, and the charging socket 23 (also see drawing 3).
The indicator 21 is a display for indication which displays

the work condition of the electric control machine 10, the power residual quantity of the battery 31 and a charge situation, the washing situation by storage and the washing box 111, etc.

[0035]

The washing switch 22 is a switch which carries out rotation and stopping operation of the electric motor 11, when carrying out washing work by storage and the washing box 111.

Only while pushing that manual operation button, when this washing switch 22 is turned on and its hold of a manual operation button is released, it is a push button switch of the well-known contact auto return type come by off.

[0036]

The charging socket 23 is a connector which inserts the charging cord 24 from the exterior, and can charge the battery 31 via the battery charger 25.

[0037]

While the control section 102 receives a signal from the washing switch 22, the battery charger 25, the handle wearing switch 56, the rotation sensor 61, and the detection means (the detection means, washing box device switch which detect a cleaning condition) 117, while emitting a status signal from the decoder 101 to the indicator 21 in response to an input signal (namely, -- embracing the signal of the receiver 62), the roll control of the electric motor 11 is carried out via the motor drive circuit 103.

[0038]

The control section 102 attaches the handle stem 122 to the handle support part 51, operating the manual operation buttons 72, 73, and 83 and the work preparation lever 82 as a final controlling element by the side of the handle 124 (refer to drawing 3), when between the body side edge children 53 and 54 is electrically connected by the handle side edge child 55 -- the tilling nail (operation part) 13 -- operate ... it controls to obtain.

therefore, the thing for which the manual operation buttons 72, 73, and 83 and the work preparation lever 82 by the side of the handle 124 (refer to drawing 3) are operated -- the tilling nail (operation part) 13 ... can be operated.

[0039]

This control section 102 extracts the base end 122a of the handle stem 122 up from the inside of the support pipe 126 of the handle support part 51, when the body side edge children 53 and 54 are electrically made un-connecting, even if it operates the manual operation buttons 72, 73, and 83 and the work preparation lever 82 by the side of the

handle 124 (refer to drawing 3) -- the tilling nail (operation part) 13 -- it controls not to operate ...

[0040]

therefore, the time of removing the base end 122a of the handle stem 122 from the support pipe 126 of the handle support part 51 -- the manual operation button by the side of the handle 124 (refer to drawing 3) -- the tilling nail 13 -- in order to prevent making ... drive, it is not necessary to form a main switch in the handle 124 side

Thereby, when the handle stem 122 is removed from the handle support part 51, it becomes possible to save the time and effort which turns off the main switch.

[0041]

Here, the composition which stops the body 17 (refer to drawing 2) to storage and the washing box 111 (also see drawing 2) is explained. That is, where the fender 14 is put on storage and the washing box 111, the fender 14 will be set to storage and the washing box 111 by the back locking means 112.

[0042]

The locking means 112 is a removable structure of what is called snap fitting form of hanging the back credit part 114,114 of the couple of the storage and washing box 111 rear on the post-engagement heights 113,113 of the couple of the fender 14 rear, after this.

By hanging the back credit part 114,114 of the storage and washing box 111 rear on the post-engagement heights 113,113 of the upper cover 15 rear, the body 17 is stopped to storage and the washing box 111.

[0043]

The post-engagement heights 113,113 of a couple are equipped with the covering side edge child (fixed electrode) 119,119 as a body side edge child, and each covering side edge child 119,119 is connected to the control section 102.

The back credit part 114,114 of a couple is attached to storage and the washing box 111 via the conductive hinge pin 115, and is provided with the stop side edge child (movable electrode) 116,116 electrically connected to the hinge pin 115.

[0044]

The covering side edge child 119,119, the stop side edge child 116,116, and the combination structure of the hinge pin 115 accomplish the detection means 117.

By hanging and stopping the back credit part 114,114 to the post-engagement heights 113,113, the stop side edge child 116,116 connects with the covering side edge child 119,119 of a couple, and the covering side edge child 119,119 of a

couple is electrically connected with the stop side edge child 116,116 and the hinge pin 115.

[0045]

Namely, when the detection means 117 makes storage and the washing box 111 stop the body 17 (refer to drawing 2) by the back locking means 112, By connecting the stop side edge child 116,116 who provided in the back locking means 112 to the covering side edge child 119,119, it constitutes so that the covering side edge child 119,119 of a couple may electrically be connected with the stop side edge child 116,116 and the hinge pin 115.

[0046]

By connecting the covering side edge child 119,119 of a couple, the covering side edge child 119,119 will be in switch-on, and detects this letter object of a flow by the control section 102.

Therefore, it is detectable by the control section 102 to have stopped the body 17 to storage and the washing box 111.

[0047]

When the control section 102 makes storage and the washing box 111 stop the body 17 by the back locking means 112, it is that the stop side edge child 116,116 of the detection means 117 connects with the covering side edge child 119,119, It detects having made storage and the washing box 111 stop the body 17, and the electric motor 11 is maintained at a controllable state by washing mode.

[0048]

Therefore, in the state where storage and the washing box 111 were made to stop the body 17, by pushing the manual operation button of the washing switch 22, a signal can get across to the control section 102, a driving signal can be told to the electric motor 11 from the control section 102, and the drive motor 11 can be driven.

[0049]

Drawing 6 is the perspective view which looked at the operation handle of the electric control machine concerning this invention from back.

The operation handle 18 forms the handle support part 51 which supports the base end 122a of the handle stem 122 enabling free attachment and detachment in the rear (body rear) 121 of the body 17, The handle 124 is attached to the handle stem 122 between that base end 122a and tip part 122b, enabling free movement, and a steering lock means 125 to lock the handle 124 in the prescribed position of the handle stem 122 at this handle 124 is formed.

The steering lock means 125 consists of operating the locking lever 141 so that the handle 124 may be held to the

prescribed position of the handle stem 122.
[0050]
Drawing 7 is a perspective view showing the handle support part of the operation handle with which the electric control machine concerning this invention was equipped.
The handle support part 51 arranges the support pipe 126 at the body rear 121, and equips the upper bed part 126a of this support pipe 126 with the handle-stem means for locking 135.
[0051]
The handle-stem means for locking 135 forms the slit 136 in the upper bed part 126a of the support pipe 126, The bracket 137,137 with a bundle of a couple is applied to the periphery of the upper bed part 126a of this support pipe 126, The bases 137a and 137a of the bracket 137,137 with a bundle of a couple are attached to the body rear 121, Set a prescribed interval in the position corresponding to the slit 136 for each protruded piece 137b and 137b of the bracket 137,137 with a bundle of a couple, and it is made to counter it mutually, The stacking bolt 138 is inserted in the breakthroughs 137c and 137c of each protruded pieces 137b and 137b, and the locking lever 141 is attached to the head 138a of the stacking bolt 138 via the mounting bolt 139.
[0052]
The locking lever 141 consists of the cam part 142 and the lever part 143. The cam part 142 has the mounting hole 144,144 (not shown [the mounting hole 144 by the side of the back]) in an approximately center, is made to intersect perpendicularly with the mounting hole 144,144, forms the storage slot 145, and equips a periphery with the cam surface 146.
[0053]
Insert the head 138a of the stacking bolt 138 in the storage slot 145, and The mounting hole 144 of the cam part 142, Fit the mounting bolt 139 over the mounting hole 138b of the head 138a, and **** the nut 147 to the thread part 139a of the mounting bolt 139 projected from the mounting hole 144 by the side of the back, and it combines with it, The upper bed part 126a of the support pipe 126 is supported with the bracket 137,137 with a bundle of a couple by ****ing the nut 148 to the thread part 138c projected from the left-hand side protruded piece 137b, combining with it, and pressing the right-hand side protruded piece 137b via the washer 149 in the cam surface 146.
[0054]
The cam surface 146 narrows the interval of the protruded pieces 137b and 137b of a couple, where the lever part 143

is located in the locked position P1 (refer to drawing 7), It is the cam formed so that the interval of the protruded pieces 137b and 137b of a couple might be widely returned to a normal interval, where the lever part 143 is located in the lock release position P2 (refer to drawing 7).

[0055]

The slit 136 of the support pipe 126 is narrowed by holding the lever part 143 to the locked position P1, and narrowing the interval of the protruded pieces 137b and 137b of a couple.

By this, the inside diameter of the upper bed part 126a of the support pipe 126 is shrunk, the base end 122a of the handle stem 122 inserted in the support pipe 126 is bound tight, and the handle stem 122 is locked in the support pipe 126.

[0056]

On the other hand, it is maintenance in the lock release position P2 about the lever part 143, and the slit 136 of the support pipe 126 is made large by extending the interval of the protruded pieces 137b and 137b of a couple.

By this, the inside diameter of the upper bed part 126a of the support pipe 126 is made to expand, bolting to the base end 122a of the handle stem 122 inserted in the support pipe 126 is made loose, and the locked position of the handle stem 122 by the support pipe 126 is canceled.

[0057]

Drawing 8 is a perspective view showing the relation of the electric control machine, and the storage and the washing box concerning this invention.

It is a box of the shape of translucent [which formed storage and the washing box 111 in rectangular shape as an example, and equipped the upper bed with the opening 118], The length L1 of body 17 cross direction, the length L2 of body 14 longitudinal direction, and height H are set to enabled storage of the parts (namely, the tilling axis 12, the tilling nail 13 ..., the resistant bar 19, etc.) of fender 14 lower part of the electric control machine 10. The resistant bar 19 is held at the state (refer to drawing 10 and drawing 12) where it was reversed from condition of use (refer to drawing 2).

the length L1 of storage and the washing box 111 -- the length L3 of the cross direction of the fender 14 -- abbreviated -- it is the same and the length L2 of storage and the washing box 111 is formed for a long time than the length L4 of the longitudinal direction of the fender 14.

[0058]

storage and the washing box 111 -- the side parts 111c and

111c -- the hinge 184 -- it has the side cover 185,185 via ... (refer to drawing 9), enabling respectively free rotation. the side cover 185,185 of a couple -- the hinge 184 -- it is provided in the side parts 11c and 11c of storage and the washing box 111 between closed states (position of drawing 9) from the opened state (position of a graphic display) centering on ..., enabling free swing.

It is also possible to make accessories, such as a tool (not shown) and a battery charger of the battery for a drive of the electric motor 11 (not shown), into storage space by equipping the side cover 185,185 of ******** with the pocket 186,186, respectively, for example.

[0059]

Storage and the washing box 111 are equipped with the locking means (locking means) 171,112 (the back locking means 112 is referring to drawing 5) of order as a means to stop the fender 14.

The last locking means 171 is a removable structure of what is called snap fitting form of hanging the apron part 173,173 of the couple with which the anterior part 111a of storage and the washing box 111 was equipped on the pre-engagement heights 172,172 of the couple with which the anterior part 15a of the upper cover 15 was equipped.

174 is a suspending portion which stops the fender 14 and the upper cover 15.

[0060]

When storing the parts (namely, the tilling axis 12, the tilling nail 13 ..., the resistant bar 19, etc.) of fender 14 lower part of the electric control machines 10 to storage and the washing box 111, The handle stem 122 of the operation handle 18 is removed from the handle support part 51 (refer to drawing 7) like the arrow a, Swing movement is carried out centering on the pin 175 like the arrow b in the upper part from the position which shows drawing 1 the career handle 16 provided in the upper part of the body 17, It has the career handle 16 by hand, and the parts (namely, the tilling axis 12, the tilling nail 13 ..., the resistant bar 19, etc.) of fender 14 lower part are stored in storage and the washing box 111 from the opening 118 of storage and the washing box 111.

[0061]

Drawing 9 is a perspective view showing the state where the electric control machine concerning this invention was set to storage and a washing box.

The parts (namely, the tilling axis 12 (refer to drawing 8), the tilling nail 13 ..., the resistant bar 19, etc.) of fender 14

lower part of the electric control machines 10 are stored to storage and the washing box 111, The anterior part 15a of the upper cover 15 is put on the anterior part 111a of storage and the washing box 111, After putting the rear 15b of the upper cover 15 on the rear 111b of storage and the washing box 111, the body 17 is stopped to storage and the washing box 111 by the locking means 171,112 (the back locking means 112 is referring to drawing 5) of order.

[0062]

Since the length L2 (refer to drawing 8) of the longitudinal direction of storage and the washing box 111 was formed for a long time than the length L4 (refer to drawing 8) of the longitudinal direction of the fender 14, here, storage and the washing box 111 -- the tilling axis 12 and the tilling nail 13 -- when ... etc. are stored, the right-and-left side of the fender 14 of the openings 118 will be in an opening state.

[0063]

then, the side parts 111c and 111c of storage and the washing box 111 -- the hinge 184 -- it decided to close the opening by the side of the right and left of the fender 14 of the openings 118 by the side cover 185,185 by having the side cover 185,185 via ..., enabling respectively free rotation.

[0064]

Although there are a thing etc. of the hinge type generally used as the hinge 184, It is also possible to use what formed the hinge 184 in the side cover 185,185 made of resin, storage and a washing box 111, and one, and was formed by making thickness of the hinge 184 thin so that elastic deformation was possible as other examples.

[0065]

Thus, it becomes possible to carry the electric control machine 10 and to keep the tilling axis 12 and the tilling nail 13 in the state where it stored to storage and the washing box 111.

Thereby, when carrying and keeping the electric control machine 10, it can store to the loading platform and storage space of a track, without making the tilling axis 12 and the tilling nail 13 touch a worker's clothing.

Therefore, a worker's clothing can be prevented from touching and becoming dirty on the tilling nail 13 when carrying and keeping the electric control machine 10.

[0066]

It is the locking means 171,112 (the back locking means 112 is referring to drawing 5) of order, and storage and the washing box 111 are certainly attached to the body 17 by stopping the body 17 to storage and the washing box 111.

Therefore, conveyance of the electric control machine 10 and the handling in the case of storage can be made easy.
[0067]
Drawing 10 is a 10-10 line sectional view of drawing 9.
The resistant bar 19 attached to the resistant bar supporter 57 is turned ahead, is arranged, and the resistant bar 19 is arranged under the tilling axis 12. This stores the tilling axis 12, tilling nail 13---, the resistant bar 19, etc. in storage and the washing box 111.
The anterior part 15a of the upper cover 15 and the anterior part 111a of storage and the washing box 111 are stopped by the last locking means 171 by hanging the apron part 173 of the anterior part 111a of storage and the washing box 111 on the pre-engagement heights 172 of the anterior part 15a of the upper cover 15.
[0068]
The rear 15b of the upper cover 15 and the rear 111b of storage and the washing box 111 are stopped by the back locking means 112 by hanging the back credit part 114,114 of the rear 111b of storage and the washing box 111 on the post-engagement heights 113,113 (refer to drawing 11) of the rear 15b of the upper cover 15.
[0069]
Here, the post-engagement heights 113 (refer to drawing 11) side is equipped with the covering side edge child 119 (body side edge child), and the tip part of the back credit part 114,114 is equipped with the stop side edge child 116,116. Therefore, the stop side edge child 116,116 is connected to the covering side edge child 119,119 by hanging the back credit part 114,114 on the post-engagement heights 113,113.
[0070]
Drawing 11 (a) and (b) is a figure explaining the back locking means of the electric control machine concerning this invention.
Here, as drawing 5 explained, the detection means 117 is the structure which combined the covering side edge child 119,119, the stop side edge child 116,116, and the hinge pin 115.
[0071]
The post-engagement heights 113 of the back locking means 112 are constituted from the engagement piece 177,177 on either side as an example, and are provided with the covering side edge child 119 between the engagement pieces 177,177 on either side.
on the other hand, the back credit part 114 of the back locking means 112 attaches the base 114a to the rear 111b

of storage and the washing box 111 via the conductive hinge pin 115, and forms the stop side edge child 116 in the tip part 114b -- the hinge pin 115 and the stop side edge child 116 -- a conductor -- it connects in the part 178.

[0072]

By hanging the back credit part 114 on the post-engagement heights 113 177,177 of the back locking means 112, i.e., an engagement piece, while stopping the rear 15b of the upper cover 15, and the rear 111b of storage and the washing box 111, the stop side edge child 116 is connected to the covering side edge child 119.

[0073]

Thus, the detection means 117 will be in the letter object of a flow, and the state of what is called one by connecting the stop side edge child 116,116 to the covering side edge child 119,119.

By detecting the letter object of a flow of this detection means 117 by the control section 102 (refer to drawing 5), it is detectable to have stopped the body 17 to storage and the washing box 111.

[0074]

What is necessary is just to constitute the composition of the back locking means 112 and the detection means 117 so that the detection means 117 may become a letter object of a flow when it does not restrict to this and the rear 15b of the upper cover 15 and the rear 111b of storage and the washing box 111 are stopped by the back locking means 112 in short.

[0075]

Drawing 12 is a 12-12 line sectional view of drawing 9.

In order to make the resistant bar supporter 57 store in the center of the rear of storage and the washing box 111, it is equipped with the projecting part 179 to back (also see drawing 10).

It becomes possible to store the body 17, the lid 46, the tilling axis 12, the tilling nail 13, the resistant bar 19, etc. as a transmission case in storage and the washing box 111 by turning ahead the resistant bar 19 attached to the resistant bar supporter 57, arranging it, and arranging the resistant bar 19 under the tilling axis 12.

[0076]

Next, an operation of the electric control machine 10 is explained based on drawing 13 - drawing 18.

Drawing 13 is a flow chart explaining an operation of the electric control machine concerning this invention, and STin figure xx shows a step number. Hereafter, based on a flow chart, an operation of an electric control machine is

explained to reference for drawing 5.

[0077]

ST01; initial setting is carried out. For example, motor setting-out revolving speed (degree of motor setting speed) SO is set as the low speed Ln. It is the same value as the revolving speed (speed) set to this the "low speed Ln" with the low-speed switch 91.

ST02; it investigates whether the operation handle 18 was set to the handle support part 51, progresses to ST03 by YES, and progresses to ST12 by NO. If the handle wearing switch 56 is one, it will judge with having set the operation handle 18.

[0078]

ST03; the main switch 75 is one, or (was there any switch signal of one?) investigates whether it is no, progresses to ST04 by YES, and progresses to ST10 by NO.

ST04; the work preparation switch 86 investigates whether it is one, progresses to ST05 by YES, and progresses to ST10 by NO.

ST05; the working starting switch 74 (motor switch 74) investigates whether it is one, progresses to ST06 by YES, and progresses to ST10 by NO.

[0079]

ST06; if four conditions, the above-mentioned ST02, ST03, ST04, and ST05, are fulfilled, the electric motor 11 will be rotated.

Namely, in the bottom of the condition of having pushed the main manual operation button as the 1st condition as the conditions of having set the operation handle 18 to the handle support part 51, and the 2nd condition (the main switch 75 is one), As the 3rd condition, when two conditions of the conditions of having lengthened the work preparation lever (the work preparation switch 86 is one), and the conditions of having pushed the working starting manual operation button as the 4th condition (the working starting switch 74 is one) are fulfilled, the electric motor 11 is rotated.

[0080]

ST07; motor setting-out revolving speed SO is read. Motor setting-out revolving speed SO is based on the switch signal of one of the low-speed switch 91, the medium-speed switch 92, or the high speed switch 93. If the high speed switch 93 is made one, motor setting-out revolving speed SO will be high-speed Hn. If the medium-speed switch 92 is carried out to one, motor setting-out revolving speed SO will be medium-speed Mn. If the low-speed switch 91 is carried out to one, motor setting-out revolving speed SO will be the low

speed Ln.
The value of high-speed Hn and medium-speed Mn and the low speed Ln is the fixed revolving speed (speed) set up beforehand, and has a relation of Hn>Mn>Ln. Motor setting-out revolving speed SO in case revolving speed (speed) is not set up by each switches 91-93 is the low speed Ln.
[0081]
ST08; the actual rotating speed (actual speed) SN of the electric motor 11 is measured. The actual rotating speed SN should just measure the actual number of rotations (revolving speed) of the electric motor 11 with the rotation sensor 61.
ST09; after carrying out rotational speed control of the electric motor 11 by motor setting-out revolving speed SO, it returns to ST02. That is, it controls so that the actual rotating speed SN is set to motor setting-out revolving speed SO. If the control signal output of motor setting-out revolving speed SO is PI control and they are PI output and PID control, it is equivalent to a PID output. This control signal output may be a pulse width modulation signal (PWM signal).
[0082]
ST10; the electric motor 11 is stopped.
Namely, as the 1st condition as the conditions of having pushed the main manual operation button again (the main switch 75 is off), and the 2nd condition, When one of the conditions of the conditions of having pushed the working starting manual operation button again (the working starting switch 74 is off) is fulfilled as the conditions of having released the work preparation lever (the work preparation switch 86 is off), and the 3rd condition, the electric motor 11 is stopped.
[0083]
ST11; after setting motor setting-out revolving speed SO as the low speed Ln, it returns to ST02. That is, it returns to the state of initial setting.
ST12; it investigates whether the washing box 111 was set to the fender 14, progresses to ST13 by YES, and progresses to ST18 by NO. If one and the covering side edge child 119,119 of ******** have the detection means 117 in the letter object of a flow, it will judge with having set the washing box 111.
ST13; the washing switch 22 investigates whether it is one, progresses to ST14 by YES, and progresses to ST18 by NO.
[0084]
ST14; if three conditions, the above-mentioned ST02, ST12, and ST13, are fulfilled, the electric motor 11 will be rotated.

Namely, in the bottom of the condition of having removed the operation handle 18 from the handle support part 51 as the 1st condition, As the 2nd condition, when the conditions of having set the washing box 111 to the fender 14, and the conditions that the washing switch 22 is one as the 3rd condition are fulfilled, the electric motor 11 is rotated.

[0085]

ST15; motor setting-out revolving speed SO is set as the washing revolving speed (backwashing rate) Wn. The washing revolving speed Wn is the number of rotations of the optimal electric motor 11 for rinsing a tilling nail in the washing box 111.

ST16; the actual rotating speed SN of the electric motor 11 is measured. The actual rotating speed SN should just measure the actual number of rotations of the electric motor 11 with the rotation sensor 61.

[0086]

ST17; after carrying out speed control of the electric motor 11 by motor setting-out revolving speed SO, it returns to ST02. That is, it controls so that the actual rotating speed SN is set to motor setting-out revolving speed SO. If the control signal output of motor setting-out revolving speed SO is PI control and they are PI output and PID control, it is equivalent to a PID output. This control signal output may be a pulse width modulation signal (PWM signal).

[0087]

ST18; the electric motor 11 is stopped. That is, when one of the conditions of the conditions of having removed the washing box 111 from the fender 14, and the conditions that the washing switch 22 is off as the 2nd condition is fulfilled as the 1st condition, the electric motor 11 is stopped.

ST19; after setting motor setting-out revolving speed SO as the low speed Ln, it returns to ST02. That is, it returns to the state of initial setting.

[0088]

In a cleaning condition, when the operation handle 18 should be set to the handle support part 51, the electric motor 11 is stopped in the course of ST02 ->ST03 ->ST10. Then, after progressing to ST11 and setting motor setting-out revolving speed SO as the low speed Ln, it returns to ST02.

[0089]

Next, in drawing 14 - drawing 18, the contents of ST02, and ST12-ST17 are explained in detail.

Drawing 14 (a) and (b) is the 1st operation explanatory view of the electric control machine concerning this invention, and is a figure explaining ST02.

In (a), it is the arrow 1 centering on the mounting bolt 139 about the lever part 143 of the handle-stem means for locking 135 from the locked position P1 to the lock release position P2. ** -- swing movement is carried out like.
[0090]
In (b), by holding the lever part 143 to the lock release position P2, the interval of the protruded pieces 137b and 137b of a couple is extended, and the slit 136 of the support pipe 126 is made large.
By this, the inside diameter of the support pipe 126 is made to expand, bolting of the handle stem 122 by the support pipe 126 is made loose, and the locked position of the handle stem 122 by the support pipe 126 is canceled.
It is the arrow 2 about the handle stem 122. ** -- it extracts from the support pipe 126 like.
[0091]
Drawing 15 is the 2nd operation explanatory view of the electric control machine concerning this invention, and is a figure explaining ST02.
By extracting the base end 122a of the handle stem 122 from the support pipe 126 of the handle support part 51, the handle side edge child 55 of the base end 122a is separated from the body side edge children 53 and 54 in the supporting post 126.
Namely, it changes into the state where the electrical link of the handle wearing switch 56 which consists of the handle side edge child 55 and the body side edge children 53 and 54 of a couple was separated.
[0092]
By thus, the thing for which the electrical link of the handle wearing switch 56 is separated. even if it operates the manual operation buttons 72, 73, and 83 and the work preparation lever 82 as a final controlling element by the side of the handle 124 (refer to drawing 3) for the control section 102 (refer to drawing 5) -- the tilling nail (operation part) 13 -- it is controllable not to operate ...
Thereby, when the handle stem 122 is removed from the support pipe 126 of the handle support part 51, it can prevent saving the time and effort which turns off the main switch.
[0093]
Drawing 16 (a) and (b) is the 3rd operation explanatory view of the electric control machine concerning this invention, and is a figure explaining ST12.
In (a), the side cover 185,185 provided in the side parts 111c and 111c of storage and the washing box 111 is opened to a closed state (position of a graphic display). From the

position which shows drawing 1 the career handle 16 provided in the upper part of the body 17 to next, the arrow 3 ** -- swing movement is carried out centering on the pin 175 like in the upper part.

[0094]

It has the career handle 16 by hand, and is the arrow 4 in storage and the washing box 111 from the opening 118 of storage and the washing box 111 about the parts (namely, the tilling axis 12, the tilling nail 13 ..., the resistant bar 19, etc.) of fender 14 lower part. ** -- it stores like.

In this case, the resistant bar 19 is held at the state (refer to drawing 10 and drawing 12) where it was reversed from condition of use (refer to drawing 2).

[0095]

In (b), it is a part (.) of fender 14 lower part of the electric control machine 10. namely, the tilling axis 12 shown in (a) and the tilling nail 13, after storing ..., the resistant bar 19, etc. to storage and the washing box 111, The anterior part 15a of the upper cover 15 is put on the anterior part 111a of storage and the washing box 111, and the rear 15b of the upper cover 15 is put on the rear 111b of storage and the washing box 111.

[0096]

In this state, the body 17 is stopped to storage and the washing box 111 by the locking means 171,112 (the back locking means 112 is referring to drawing 10) of order.

Next, after closing the side cover 185 by the side of the back, the hose 181 to the water 182 is supplied in storage and the washing box 111 from a near side among the openings 118 of storage and the washing box 111.

After supplying the water of the specified quantity in storage and the washing box 111, the hose 181 is removed and the side cover 185 of a near side is closed.

[0097]

Drawing 17 (a) and (b) is the 4th operation explanatory view of the electric control machine concerning this invention, and is a figure explaining ST12.

Here, the procedure of stopping the rear 15b of the upper cover 15 at the rear 111b of storage and the washing box 111 by the back locking means 112 is explained in detail.

[0098]

In (a), it is the arrow 5 centering on the conductive hinge pin 115 about one back credit part 114 of the back locking means 112. ** -- swing movement is carried out like.

The tip part 114b of the back credit part 114 is moved towards the engagement piece 177,177 (a near side is not

shown) on either side and the covering side edge child 119.
[0099]
In (b), while the tip part 114b of the back credit part 114 stops to the engagement piece 177,177 (the back side is shown in (a)) on either side, the stop side edge child 116 of the locking means 117 connects with the covering side edge child 119 of the locking means 117.
therefore, the covering side edge child 119 -- the stop side edge child 116 and a conductor -- it electrically connects with the hinge pin 115 via the part 178.
That is, as drawing 5 explained, the stop side edge child 116,116 connects with the covering side edge child 119,119 of a couple, and the covering side edge child 119,119 of a couple is electrically connected with the stop side edge child 116,116 and the hinge pin 115.
[0100]
Thereby, the detection means 117 becomes a letter object of a flow, i.e., the state of one, and detects this letter object of a flow by the control section 102 (refer to drawing 5).
Therefore, it detects having stopped the body 17 to storage and the washing box 111 by the control section 102.
Thus, when the letter object of a flow of the detection means 117 is detected, the control section 102 maintains the electric motor 11 at a controllable state by washing mode.
[0101]
Drawing 18 is the 5th operation explanatory view of the electric control machine concerning this invention, and is a figure explaining ST13-ST17.
It is the arrow 6 about the tilling axis 12 and the tilling nail 13 with the electric motor 11 (refer to drawing 12) by one [pushing the manual operation button of the washing switch 22 (refer to drawing 3), and / the washing switch 22]. ** -- it is made to rotate like
[0102]
Under the present circumstances, the actual rotating speed SN of the electric motor 11 is measured, and the number of rotations of the electric motor 11 is controlled so that the actual rotating speed SN is set to motor setting-out revolving speed SO.
Thus, the water 182 supplied from the hose 181 in storage and the washing box 111 can wash the body 17, the tilling axis 12, the tilling nail 13, the resistant bar 19, etc. as a transmission case by rotating the electric motor 11.
Motor setting-out revolving speed SO can also be set up set it as fixed number of rotations, and also change at random.
[0103]

Here, the side cover 185,185 of the couple is closed in the case of washing of the body 17, the tilling axis 12, the tilling nail 13, the resistant bar 19, etc.
Therefore, since the side cover 185,185 (refer to drawing 9 and drawing 16) and the fender 14 of a couple can close the opening 118 of storage and the washing box 111, the water 182 in storage and the washing box 111 can prevent dispersing from the opening 118.
[0104]
In addition, storage and the washing box 111 are certainly attached to the body 17 by stopping the body 17 to storage and the washing box 111 by the locking means 171,112 of order.
Therefore, since storage and the washing box 111 do not separate from the body 17 in the case of washing, the handling at the time of washing work can be made easy.
[0105]
By this embodiment, only while pushing the manual operation button as the washing switch 22, when it was turned on and its hold of a manual operation button was released, explained the example which uses the switch come by off, but. It is also possible to use the push button switch which is turned on and come by off by pushing a manual operation button once, for example by pushing a manual operation button again in the state of the one as the other washing switches 22.
In this case, while rotating the electric motor 11 by making the washing switch 22 one, it is also possible to operate a timer (not shown) and to make it stop the electric motor 11 after abbreviated 5-minute progress.
[0106]
In thus, the state where storage and the washing box 111 were made to stop the body 17 by the locking means 171,112 of order. By making the electric motor 11 drive and rotating the tilling nail 13 by keeping the electric motor 11 controllable, after supplying the wash water 182 in storage and the washing box 111. The body 17, the tilling axis 12, the tilling nail 13, the resistant bar 19, etc. can be washed in storage and the washing box 111.
Thereby, it can wash easily, without soiling a hand without covering the body 17, the tilling axis 12, the tilling nail 13, the resistant bar 19, etc. for time and effort.
[0107]
In addition, when making storage and the washing box 111 stop the body 17 by the locking means 171,112 of order and connecting the stop side edge child 116,116 of the detection means 117 to the covering side side edge child 119,119, It

constituted from detecting connection with the stop side edge child 116,116 and the covering side side edge child 119,119 by the control section 102 so that the electric motor 11 might be maintained at a controllable state.
[0108]
therefore -- making the electric motor 11 control certainly, only when storage and the washing box 111 are made to stop the body 17 by the locking means 171,112 of order -- the inside of storage and the washing box 111 -- the tilling axis 12 and the tilling nail 13 ... can be washed.
Thereby, the time and effort in which a worker checks the locked state of the locking means 171,112 of order in the case of washing can be saved.
[0109]
In said embodiment, as members forming of the last locking means 171 which sets the upper cover 15 and the fender 14 to storage and the washing box 111, Although the example which formed the pre-engagement heights 172,172 of the couple in the anterior part 15a of the upper cover 15, and formed the post-engagement heights 113,113 of the couple in the rear 15b of the upper cover 15 as members forming of the back locking means 112 was explained, It is also possible to form the pre-engagement heights 172,172 of a couple in the anterior part of the fender 14, and to form the post-engagement heights 113,113 of a couple in the rear of the fender 14 without restricting to this.
[0110]
[Effect of the Invention]
This invention demonstrates the following effect by the above-mentioned composition.
Claim 1 stored the tilling axis and the tilling nail to storage and a washing box, covered the opening of storage and a washing box on the body, and it constituted it so that the body might be stopped to storage and a washing box by a locking means. Therefore, it becomes possible to carry an electric control machine and to keep a tilling axis and a tilling nail in the state where it stored to storage and a washing box.
[0111]
Thereby, when carrying and keeping an electric control machine, it can store to the loading platform and storage space of a track, without making a tilling axis and a tilling nail touch a worker's clothing.
Therefore, a worker's clothing can be prevented from touching and becoming dirty on a tilling nail when carrying and keeping an electric control machine.
[0112]

It constituted from a state where storage and a washing box were made to stop the body by a locking means so that an electric motor might be kept controllable. Therefore, after supplying wash water in storage and a washing box, a tilling axis and a tilling nail are washed in storage and a washing box by making an electric motor drive and rotating a tilling nail.
By this, it can wash easily, without soiling a hand without applying time and effort for a tilling axis or a tilling nail, and improvement in convenience can be aimed at.
[0113]
Like claim 1, claim 2 stored the tilling axis and the tilling nail to storage and a washing box, covered the opening of storage and a washing box on the body, and it constituted it so that the body might be stopped to storage and a washing box by a locking means.
Thus, when carrying an electric control machine and keeping a tilling axis and a tilling nail by storing to storage and a washing box, it becomes possible to store to the loading platform and storage space of a track so that a worker's clothing can be touched at neither a tilling axis nor a tilling nail.
Therefore, when carrying and keeping an electric control machine, there is no fear of a worker's clothing touching and becoming dirty on a tilling nail.
[0114]
In addition, according to claim 2, storage and a washing box were made to stop the body by a locking means, and the stop side edge child of the detection means was connected to the body side edge child, and it constituted from detecting connection of both terminals by a control section so that an electric motor might be maintained at a controllable state.
Therefore, only when storage and a washing box are made to stop the body by a locking means, an electric motor can be made to be able to control certainly and a tilling axis and a tilling nail can be washed in storage and a washing box.
Thereby, in the case of washing, it becomes possible to save the time and effort in which a worker checks the locked state of a locking means, and improvement in convenience can be aimed at further.
[Brief Description of the Drawings]
[Drawing 1]The perspective view showing the electric control machine concerning this invention
[Drawing 2]The side view showing the electric control machine concerning this invention
[Drawing 3]The top view showing the electric control machine concerning this invention

[Drawing 4]As for (a), the sectional view showing the electric control machine concerning this invention and (b) are the 4b-4b line sectional views of (a).
[Drawing 5]The electric diagram showing the electric control machine concerning this invention
[Drawing 6]The perspective view which looked at the operation handle of the electric control machine concerning this invention from back
[Drawing 7]The perspective view showing the handle support part of the operation handle with which the electric control machine concerning this invention was equipped
[Drawing 8]The perspective view showing the relation of the electric control machine, and the storage and the washing box concerning this invention
[Drawing 9]The perspective view showing the state where the electric control machine concerning this invention was set to storage and a washing box
[Drawing 10]The 10-10 line sectional view of drawing 9
[Drawing 11]The figure explaining the back locking means of the electric control machine concerning this invention
[Drawing 12]The 12-12 line sectional view of drawing 9
[Drawing 13]The flow chart explaining an operation of the electric control machine concerning this invention
[Drawing 14]The 1st operation explanatory view of the electric control machine concerning this invention
[Drawing 15]The 2nd operation explanatory view of the electric control machine concerning this invention
[Drawing 16]The 3rd operation explanatory view of the electric control machine concerning this invention
[Drawing 17]The 4th operation explanatory view of the electric control machine concerning this invention
[Drawing 18]The 5th operation explanatory view of the electric control machine concerning this invention
[Drawing 19]The front view showing the conventional walk type tilling machine
[Description of Notations]
10 [-- Tilling nail,] -- An electric control machine, 11 -- An electric motor, 12 -- A tilling axis, 13 17 [-- An after locking means (locking means), 116 / -- A stop side edge child, 117 / -- A detection means, 118 / -- An opening, 119 / -- A covering side edge child (body side edge child) 171 / -- Before locking means (locking means).] -- The body, 102 -- A control section, 111 -- Storage and a washing box, 112

[Translation done.]